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CAPTION FOR COVER PHOTOGRAPH

3,243 million-year-old spherules in the Fig Tree Group, Barberton Greenstone Belt, South Africa, formed as a result of large meteorite impacts on the early Earth. The 35-cm-thick spherule bed (S3) is composed of nearly pure spherules produced during the condensation of an impact-produced rock vapor cloud. The estimated diameter of the bolide was 20–50 km. The spherules, 0.5–1.5 mm in diameter in the photo, include silica-(clear), phyllosilicate- (gray), and rutile/anatase-rich (black) varieties; massive and layered types; and a few originally hollow spherules. This is one of four spherule layers in the Barderton Belt, ranging from 3,470–3,243 Ma, that represent the oldest known impact deposits and provide direct evidence for a significant flux of large impactors as late as 3.2 Ga. Photograph: D.R. Lowe

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